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NAS WHITING FIELD  
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FINAL RECORD OF DECISION FOR SITE 32 NAS WHITING FIELD FL  
9/14/2004  
TETRA TECH NUS

**RECORD OF DECISION  
FOR  
SURFACE AND SUBSURFACE SOILS AT  
SITE 32, NORTH FIELD MAINTENANCE HANGAR**

**NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA  
EPA ID No. FL2170023244**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:**

**Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406**

**Submitted by:**

**Tetra Tech NUS, Inc.  
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**CONTRACT NUMBER N62467-94-D-0888  
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**SEPTEMBER 2004**

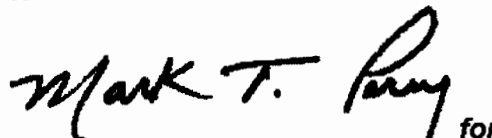
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#### CERTIFICATION OF TECHNICAL DATA CONFORMITY

The Contractor, Tetra Tech NUS Inc., hereby certifies, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-94-D-0888 are complete, accurate, and comply with all requirements of this contract. The work and professional opinions rendered in this report were conducted or developed in accordance with commonly accepted procedures consistent with applicable standards of practice.

DATE: 14 September 2004

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## ACRONYMS

APU	all-purpose universal (thinner)
ARAR	applicable or relevant and appropriate requirement
BaPEq	benzo(a)pyrene equivalent
bls	below land surface
CCI	CH2M HILL Constructors, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CG	cleanup goal
COC	constituent of concern
COPC	constituent of potential concern
cPAH	carcinogenic PAH
CSF	Cancer Slope Factors
ECs	engineering controls
ELCR	excess lifetime cancer risk
ERA	ecological risk assessment
F.A.C.	<i>Florida Administrative Code</i>
FDEP	Florida Department of Environmental Protection
FSA	Feasibility Study Addendum
FS	Feasibility Study
HHRA	human health risk assessment
HI	Hazard Index
IR	Installation Restoration
LUC	land use control
MEK	methyl ethyl ketone
mg/kg	milligrams per kilogram
NAS	Naval Air Station
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NPW	Net Present Worth
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
PAH	polynuclear aromatic hydrocarbon
PPE	personal protective equipment
PRG	Preliminary Remediation Goal
RA	remedial action
RAB	Restoration Advisory Board
RAO	remedial action objective
RBC	Risk-Based Concentration

RD	Remedial Design
RfD	reference dose
RI	remedial investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SCTL	soil cleanup target level
SSL	soil screening level
SVOC	semivolatile organic compound
TBC	to be considered
TCE	trichloroethene
TEF	Toxicity Equivalency Factor
TRPH	total recoverable petroleum hydrocarbons
TSDF	treatment, storage, and disposal facility
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

## **1.0 DECLARATION OF THE RECORD OF DECISION**

### **1.1 SITE NAME AND LOCATION**

Site 32 is a parcel of land approximately 3.5 acres in size located at the North Field Maintenance Hangar, Building 1424 at Naval Air Station (NAS) Whiting Field, Milton, Florida (Figure 1-1). The site includes Building 1424, the adjacent wash rack area, and the former location of four waste oil/kerosene underground storage tanks (USTs) east of Building 1424.

### **1.2 STATEMENT OF BASIS AND PURPOSE**

This decision document presents the selected remedial action (RA) for surface and subsurface soils at Site 32, NAS Whiting Field. Groundwater at NAS Whiting Field has been identified as a separate site (Site 40, Groundwater) and will be addressed in a future decision document. The selected action was chosen by the Navy and the United States Environmental Protection Agency (USEPA) in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The information supporting the selection of this RA is contained in the Administrative Record for this site. The NAS Whiting Field Information Repository, including the Administrative Record, is located at the West Florida Regional Library, Milton Branch, 805 Alabama Street, Milton, Florida, 32570 (850) 623-5565.

The Florida Department of Environmental Protection (FDEP) concurs with the selected remedy.

### **1.3 ASSESSMENT OF THE SITE**

Prior to the removal of four USTs from the site in September 2000 [CH2M Hill Constructors, Inc., (CCI), 2001], investigation and evaluation of constituents present in the surface and subsurface soils at Site 32 identified five inorganic analytes and total recoverable petroleum hydrocarbons (TRPH) exceeding State of Florida (FDEP, 1999) or USEPA (USEPA, 1999) risk-based screening values for residential land-use. Approximately 299 cubic yards of TRPH contaminated soil was excavated and disposed of off-site during the UST removal project. Post-removal soil sampling results, changed status of selected inorganic analytes, and changed USEPA screening criteria were evaluated in a Feasibility Study (FS) Addendum (FSA) [Tetra Tech NUS, Inc. (TtNUS), 2004]. The FSA identified the following constituents exceeding screening levels for residential land use: naphthalene, tetrachloroethene, trichloroethene (TCE), total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and TRPH. The only surface soil constituent of concern (COC) identified in the FSA was TRPH. For subsurface soil, TRPH, TCE, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene and benzo(a)pyrene were identified as COCs.

Human health risks for exposure to surface and subsurface soils at Site 32 were evaluated in a revised human health risk assessment (HHRA) presented in the FSA. A summary of human health risks is provided in Section 2.6.1 of this Record of Decision (ROD). The results of the ecological risk assessment (ERA) presented in the Remedial Investigation (RI) indicate potential ecological risks at the site are acceptable, and further ecological study is unwarranted because the site is heavily industrialized and severely limited in the quantity and quality of habitat. Site 32 is characterized by mowed turfgrass surfaces, heavy human activity, and high vehicle/aircraft traffic. As a result of the heavy human activity and vehicle and aircraft noise, terrestrial wildlife is deterred from using the site. Most importantly, the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the base. A discussion of the potential ecological risk is presented in Section 2.6.2 of this ROD.

The response actions selected in this ROD are necessary to protect the public health, welfare, or the environment from actual or threatened releases of hazardous substances into the environment or of pollutants or contaminants from this site presenting an imminent and substantial endangerment to public health or welfare.

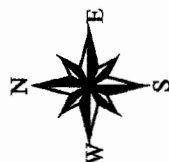
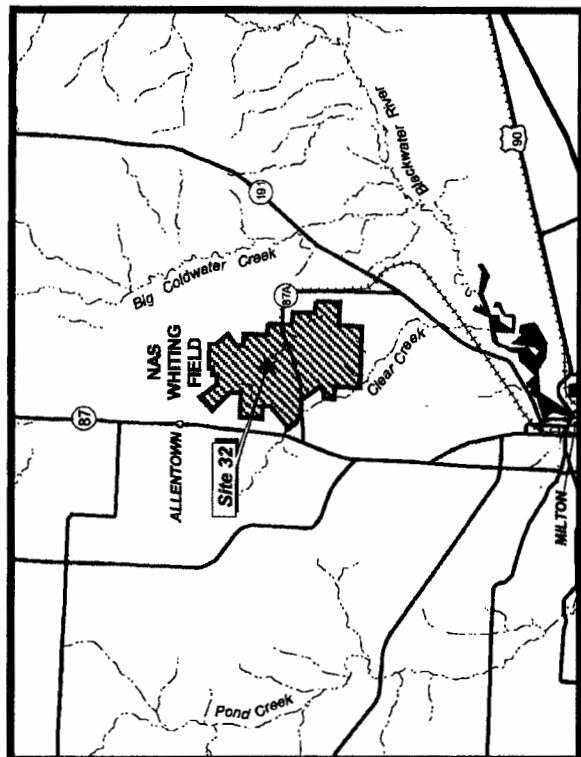
#### **1.4 DESCRIPTION OF THE SELECTED REMEDY**

This ROD presents the final action for surface and subsurface soils at Site 32 and is based upon the results of the following site-related documents: the RI (TtNUS, 1999); the Feasibility Study (FS) (TtNUS, 2001a); the Proposed Plan (TtNUS, 2001b); and the FSA (TtNUS, 2004). This ROD addresses only surface and subsurface soils at Site 32.

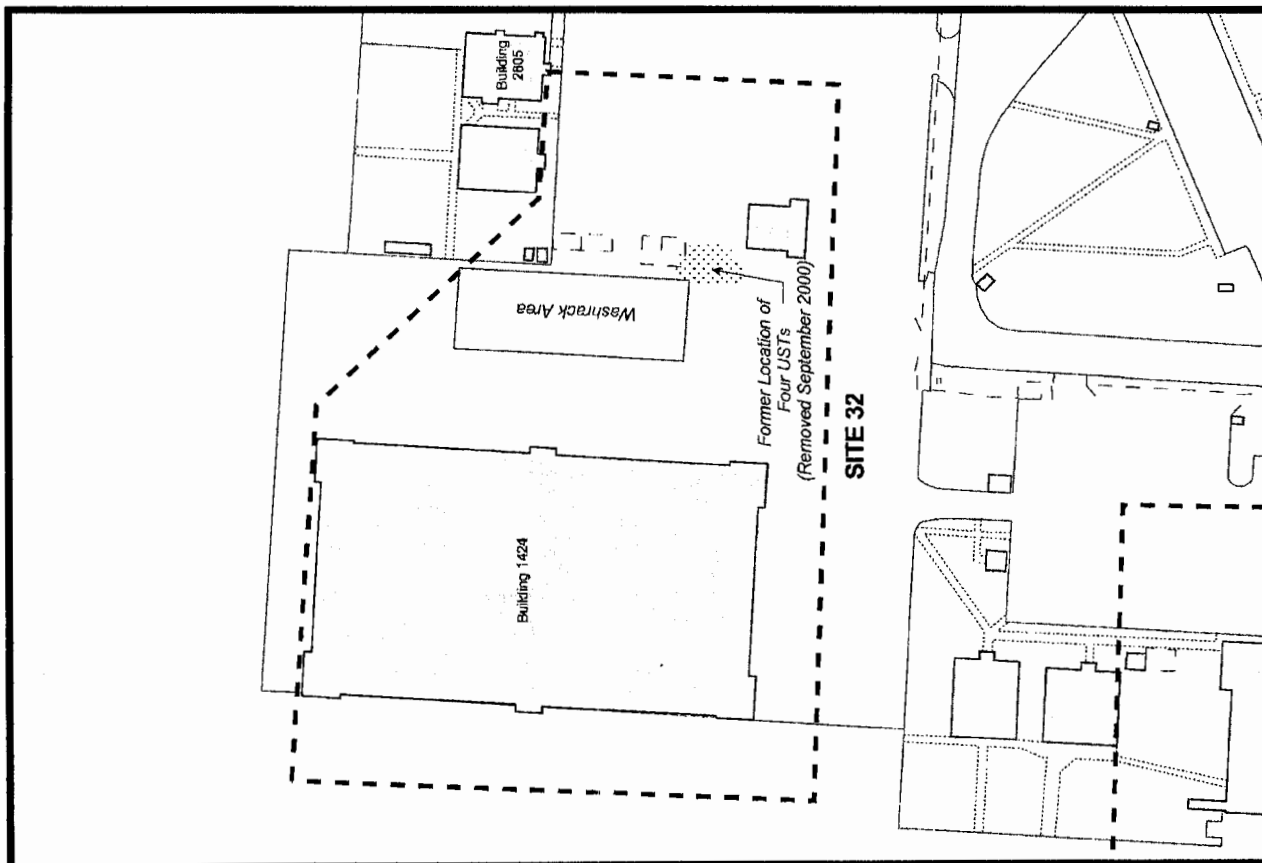
Actual or potential groundwater contamination at NAS Whiting Field has been identified as a separate site (Site 40, Basewide Groundwater) and will be addressed in a future decision document. Sediment and surface water are not present at Site 32. The selected remedy for Site 32 is Alternative 2, Engineering Controls (ECs) and Land Use Controls (LUCs). The purpose of such controls is to prevent future exposures to both surface and subsurface soils posing possible unacceptable human health risks. The selected remedy was determined based on an evaluation of site conditions, site-related risks, reasonably anticipated future land use(s), applicable or relevant and appropriate requirements (ARARs), and remedial action objectives (RAOs).

The major components of the selected remedy are as follows:

- ECs in the form of existing concrete and asphalt cover areas on the site.



**FIGURE 1-1**  
**SITE 32 LOCATION AND AREA MAP**  
**RECORD OF DECISION**  
**NAS WHITING FIELD, MILTON, FLORIDA**



- LUCs prohibiting the digging into or disturbing of existing concrete or asphalt cover areas on the site.
- LUCs prohibiting future residential development of the site.

If the selected ECs and LUCs are shown to be ineffective in preventing unacceptable exposures to contaminated surface or subsurface soils, then other remedial approaches will be evaluated and may be implemented. Specific implementation and maintenance actions to ensure the viability of the selected remedy will be described in a Remedial Design (RD) document to be prepared in accordance with USEPA guidance. The document will be submitted to USEPA and FDEP for review and comment along with all other required post-ROD documents.

The Navy estimates the present worth cost of the selected remedy to be \$82,000 over a 30 year period. The selected remedy must remain in place indefinitely, unless all contaminated surface and subsurface soils are removed or subsequent sampling demonstrates they meet then applicable criteria for unrestricted use of the site.

## **1.5 STATUTORY DETERMINATIONS**

The RA selected for surface and subsurface soils at Site 32 is protective of human health and the environment, complies with federal and state requirements legally applicable or relevant and appropriate to the RA, is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.


This remedy does not satisfy the statutory preference for treatment as a principal element of the remedy (i.e., reduction in the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants through treatment as a principal element) because contaminated soils will remain in place. Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on site above residential health-based levels, a statutory review will be conducted every five years after initiation of the RA to ensure the remedy continues to be protective of human health and the environment.

## **1.6 DATA CERTIFICATION CHECKLIST**

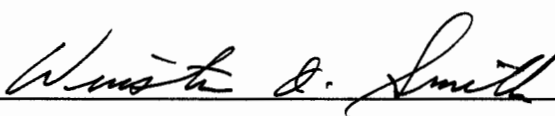
The information required to be included in the ROD is summarized on Table 1-1. These data are presented in Section 2.0, Decision Summary, of this ROD. Additional information, if required, can be found in the NAS Whiting Field Administrative Record for Site 32.

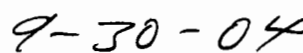
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**AUTHORIZING SIGNATURES**

  
\_\_\_\_\_  
Joan Platz  
Captain, United States Navy  
Commanding Officer, NAS Whiting Field

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Winston A. Smith  
Director, Waste Management Division  
USEPA, Region IV

  
\_\_\_\_\_  
Date

**TABLE 1-1**  
**DATA CERTIFICATION CHECKLIST**  
**RECORD OF DECISION**  
**SITE 32, NORTH FIELD MAINTENANCE HANGAR**  
**NAVAL AIR STATION WHITING FIELD**  
**MILTON, FLORIDA**

<b>Information</b>	<b>ROD Reference</b>
Constituent of Concern (COCs) and their concentrations.	Sections 2.5.1.1 and 2.5.1.2 Page 2-9  Figure 2-2, page 2-11
Baseline risk represented by the COCs.	Section 2.6.3 Pages 2-17 and 2-18
Cleanup Goals (CGs) established for the COCs.	Sections 2.7.1 Page 2-19
Disposition of source materials constituting principal threat.	Section 2.2 Page 2-1
Current and reasonably anticipated future land and groundwater use scenarios used for risk assessment.	Section 2.6.1 Page 2-14
Potential land and groundwater uses available at the site as a result of the selected remedy.	Section 2.10.4 Pages 2-29
Estimated capital, operation and maintenance (O&M), and net present worth (NPW) costs, discount rate used and timeframe these costs are projected for the selected remedy.	Section 2.10.3 Page 2-29 Table 2-5, Page 2-30
Key factors leading to the selection of the remedy.	Section 2.10.1 Page 2-23

## 2.0 DECISION SUMMARY

### 2.1 SITE NAME, LOCATION, AND DESCRIPTION

Site 32 is a parcel of land approximately 3.5 acres in size located at the North Field Maintenance Hangar, Building 1424, at NAS Whiting Field, Milton, Florida (Figure 1-1). The site includes Building 1424, the adjacent wash rack area, and the former location of four waste oil/kerosene USTs east of Building 1424 (Figure 2-1).

### 2.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

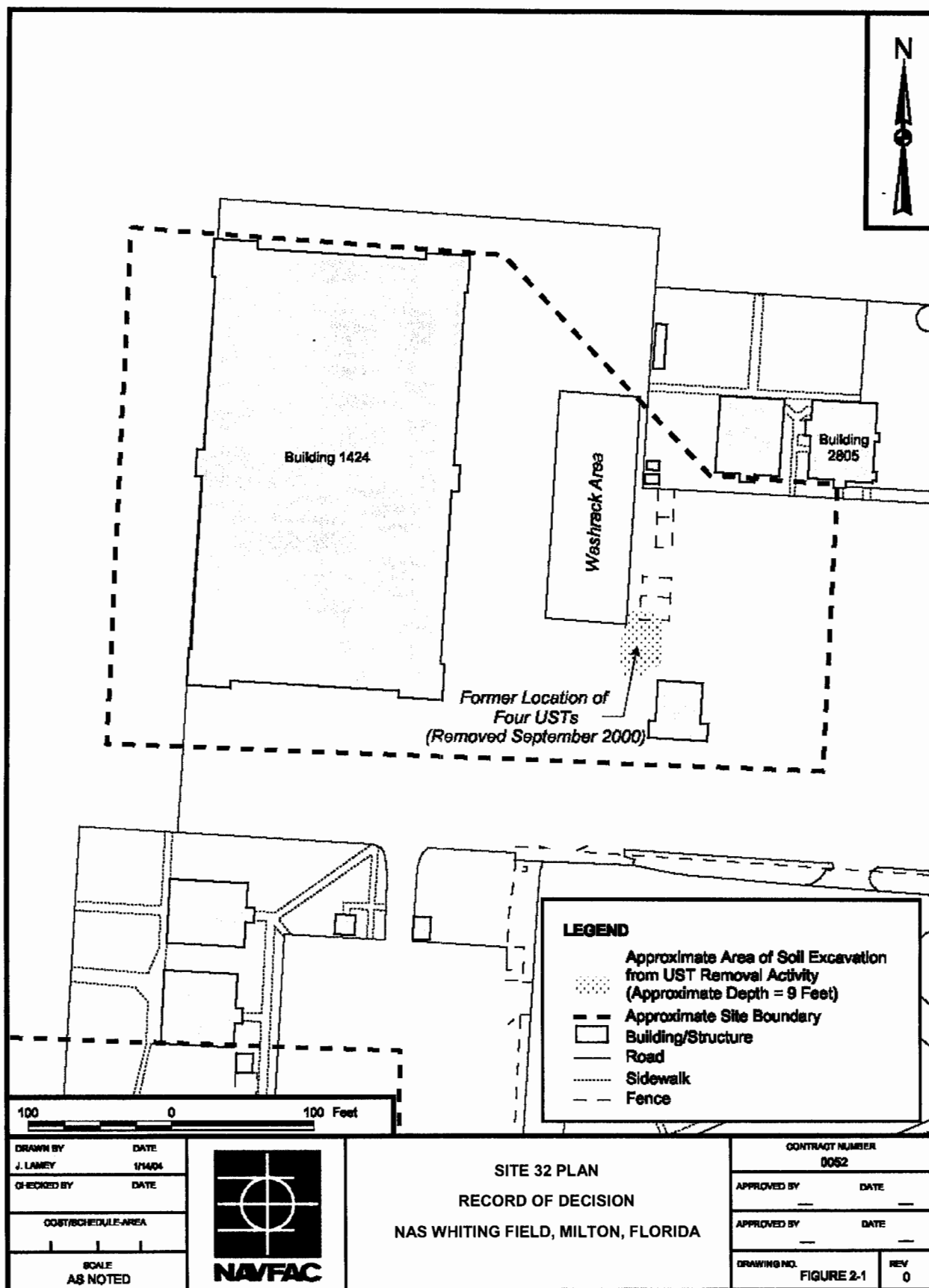
#### 2.2.1 NAS Whiting Field History

NAS Whiting Field was placed on the National Priorities List (NPL) by the USEPA in June 1994. Following the listing of NAS Whiting Field on the NPL, remedial response activities have been completed pursuant to CERCLA.

The first environmental studies for the investigations of waste handling and/or disposal sites at NAS Whiting Field were conducted during the Initial Assessment Study (Envirodyne Engineers, Inc., 1985). The record search indicated, throughout its years of operation, NAS Whiting Field generated a variety of wastes related to pilot training, the operation and maintenance (O&M) of aircraft and ground support equipment, and facility maintenance programs.

#### 2.2.2 Site 32 History

The North Field Maintenance Hangar was constructed in the mid-1940s to support maintenance service for training aircraft. Activities at this site included engine maintenance, corrosion control, and aircraft cleaning. These activities generated waste stripping compounds, cleaning solvents, paint wastes, alkaline cleaners, detergents, oil, and hydraulic fluids. Before Aircraft Intermediate Maintenance Department activities began, aircraft maintenance wastes from Hangar 1424 were reportedly sent to base landfills; however, spills and uncontrolled disposal of solvents were common occurrences in the 1940s and 1950s. Oil changes were routinely performed on the fixed-wing aircraft as part of the normal maintenance activities. The waste oil was reportedly poured into the four USTs located adjacent to the wash rack area. The four tanks ranged in size from 846 to 1,868 gallons. In 1986, the contents of the USTs were removed for off-base disposal and the tanks were abandoned in place by filling the tanks with sand and the aperture with concrete. The tanks were removed in September 2000 (CCI, 2001).



### 2.2.3 Site Investigations

Elevated concentrations of organic compounds and inorganic analytes were identified at Site 32 during various investigations as summarized in Table 2-1.

An FS (TtNUS, 2001a) was conducted to identify the best approach to address soil contamination identified in the RI. The FS identified estimated areas impacted by COCs and evaluated four remedial alternatives. Three of the four alternatives included the UST removal as a component. The Navy scope of work for CCI identified Sites 30, 32, and 33 as having abandoned in place USTs requiring remedial action/removal. Site 30, South Field Maintenance Hangar, and Site 33, Midfield Maintenance Hangar, are being addressed in separate RODs. Documentation of the waste oil UST removal for Site 32 is included in the Project Completion Report, UST Removal at Sites 30, 32, and 33 (CCI, 2001). The USTs, their contents, and a small amount of adjacent petroleum-contaminated soil were removed as a potential source of contamination.

An FSA (TtNUS, 2004) was conducted to address the following activities undertaken and determinations made since the original FS was submitted:

- UST Removal – The Project Completion Report (CCI, 2001), documenting the UST removals conducted in September 2000, was submitted in August 2001. The four USTs at Site 32 were removed along with approximately 299 cubic yards of contaminated soil (CCI, 2001). Of the 299 cubic yards, approximately 16 cubic yards were shipped as hazardous waste due to the presence of tetrachloroethene and lead. UST tank pit confirmation soil sampling identified the following contaminants at concentrations exceeding regulatory screening levels: naphthalene, tetrachloroethene, trichloroethene (TCE), total xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1-methylnaphthalene, 2-methylnaphthalene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and TRPH. Five of the constituents identified (naphthalene, tetrachloroethene, total xylenes, and 2-methylnaphthalene, and TRPH) had been previously detected in soil samples taken during the RI.
- Arsenic originally identified as a constituent of potential concern (COPC) was determined to be naturally occurring at Site 32. Based on additional review of inorganic data from the facility and area soil geology in April 2001, the observed arsenic values were determined to represent naturally occurring levels (FDEP, 2001). Because the identified human health risks associated with arsenic are now considered to be due to naturally occurring levels, arsenic has not been retained as a COPC, and remediation of arsenic in surface soil is not required for Site 32.

TABLE 2-1

**INVESTIGATIVE HISTORY  
RECORD OF DECISION  
SITE 32, NORTH FIELD MAINTENANCE HANGAR  
NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA  
PAGE 1 OF 2**

Date of Field Activities	Investigation Title	Activities	Findings
1985	<i>Initial Assessment Study of Naval Air Station Whiting Field, Milton, Florida, Final Report</i> (Envirodyne Engineers, Inc., 1985)	<ul style="list-style-type: none"> <li>Site 32 was not designated; however, the North Field Maintenance Hangar was discussed in a review of waste disposal practices at the facility.</li> </ul>	<ul style="list-style-type: none"> <li>Waste generated at North Field Maintenance Hangar includes waste stripping compounds, cleaning solvents, paint wastes, alkaline cleaners, detergents, oil, and hydraulic fluids.</li> <li>Oil changes were routinely performed on the fixed-wing aircraft as part of the normal maintenance activities. The waste oil was reportedly poured into the underground waste oil tanks located adjacent to the wash rack area until the tanks were abandoned in the 1980s. The waste oil was removed from the tanks by a contractor for off-base disposal.</li> <li>Other wastes generated by maintenance activities included mineral spirits, MEK, hydraulic fluids, APU thinner, and paint strippers</li> <li>Fixed-wing aircraft are washed at the wash rack area located east of Building 1424. Aircraft washing is performed on each aircraft on a 14-day cycle. The aircraft cleaning solution (detergent/soap) is consumed at a rate of about 4,200 gallons/year. Before approximately 1972, the wastewater from this operation was discharged to the storm sewer. Subsequently, the wash rack was disconnected from the storm sewer and connected to the sanitary sewer system, allowing the wastewater to be treated at the sewage treatment plant.</li> </ul>
Phase I - 1992  Phase II-A 1992 - 1994 Phase II-B 1994 - 1996  Phase II-C 1998	<i>Remedial Investigation Report for Surface and Subsurface Soil, Sites 3, 4, 6, 30, 32, and 33 Naval Air Station Whiting Field, Milton, Florida (TINUS, 1999)</i>	<ul style="list-style-type: none"> <li>Review of historical records and aerial photographs.</li> <li>Field inspections and personal interviews.</li> <li>Soil gas survey.</li> <li>Installation of 22 soil borings.</li> <li>Collection and analysis of surface soil samples.</li> <li>Collection and analysis of subsurface soils samples</li> <li>HHRA</li> <li>ERA</li> </ul>	<ul style="list-style-type: none"> <li>The North Field Maintenance Hangar was constructed in the mid-1940s to support maintenance service to training aircraft. Activities at this site included engine maintenance, corrosion control, and aircraft cleaning.</li> <li>The HHRA determined the carcinogenic risk from exposure to surface soil was within USEPA's acceptable risk range for current and future receptors at Site 32.</li> <li>The total ELCR associated with exposure to surface soil by a hypothetical future resident (1.9E-05), older child/adult trespasser (2.0E-06), and occupational worker (3.4E-06) exceeded FDEP's threshold level of 1.0E-06 due primarily to the presence of arsenic.</li> <li>The non-carcinogenic HIs associated with ingestion and direct contact of soil under current and hypothetical future land-uses are below USEPA and FDEP's threshold of 1.0.</li> <li>The ERA does not predict unacceptable risks to plants or animals from chemicals present in surface soil at Site 32 due to the limited quantity and quality of habitat present at the site.</li> </ul>

**TABLE 2-1**  
**INVESTIGATIVE HISTORY**  
**RECORD OF DECISION**  
**SITE 32, NORTH FIELD MAINTENANCE HANGAR**  
**NAVAL AIR STATION WHITING FIELD**  
**MILTON, FLORIDA**  
**PAGE 2 OF 2**

Date of Field Activities	Investigation Title	Activities	Findings
2000	Project Completion Report, UST Removal at Sites 30, 32, and 33, Naval Air Station Whiting Field, Milton, Florida (CCI, 2001)	<ul style="list-style-type: none"> <li>Excavation and removal of soil around the four previously abandoned USTs</li> <li>Removal of four USTs</li> <li>Collection and analysis of confirmation soil samples from bottom and sidewalls of excavation</li> </ul>	<ul style="list-style-type: none"> <li>Excavation area was approximately 30 by 50 feet, 9 feet deep. Approximately 283 cubic yards of TRPH-contaminated soil were removed as nonhazardous waste; 16 cubic yards were removed as hazardous waste due to presence of tetrachloroethene and lead.</li> <li>Liquids and minor amounts of sand were found in the four abandoned Site 32 USTs. Approximately 3,500 gallons of liquid hazardous waste and 1,800 gallons of liquid nonhazardous fuel and water were disposed.</li> <li>Confirmation soil samples showed exceedances of residential FDEP SCTLs for TRPH, benzo (a)pyrene and two VOC compounds.</li> <li>Identified TRPH as a surface and subsurface soils COC.</li> </ul>
2001	Feasibility Study for Surface and Subsurface soils at Sites 3, 4, 6, 30, 32, and 33, NAS Whiting Field, Milton Florida (TINUS, 2001a)	<ul style="list-style-type: none"> <li>Determined COCs and area and volume of contaminated soil</li> <li>Evaluated remedial alternatives.</li> </ul>	<ul style="list-style-type: none"> <li>Preferred remedial action is LUCs.</li> <li>No public comments received.</li> </ul>
2001	Proposed Plan, Site 32, North Field Maintenance Hangar, NAS Whiting Field, Milton, Florida (TINUS, 2001b)	<ul style="list-style-type: none"> <li>Established public comment.</li> </ul>	<ul style="list-style-type: none"> <li>Revised COC list includes TRPH in surface and subsurface soils; TCE, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and benzo(a)pyrene equivalents in subsurface soils.</li> <li>ELCR for hypothetical future resident, typical construction worker are 4.75E-05 and 9.4E-07, respectively.</li> <li>HI for hypothetical future resident is 3.71. HI for construction worker is 0.45. HIs for target organ specific basis for resident and construction worker do not exceed 1.0.</li> </ul>
2003	Feasibility Study Addendum for Site 32 Surface and Subsurface Soil, Naval Air Station Whiting Field, Milton, Florida (TINUS, 2004)	<ul style="list-style-type: none"> <li>Revised COCs based on Region IX PRGs and new subsurface data from UST removal</li> <li>Revised HHRA</li> </ul>	

Notes: APU = all purpose universal (thinner)  
CCI = CH2M HILL Constructors, Inc.  
COC = Constituent of Concern  
COPC = Constituent of Potential Concern  
cPAH = carcinogenic Polynuclear Aromatic Hydrocarbon  
ELCR = excess lifetime cancer risk  
ERA = Ecological Risk Assessment  
FDEP = Florida Department of Environmental Protection  
HHRA = Human Health Risk Assessment  
HI = Hazard Index

MEK = methyl ethyl ketone  
PRGs = Preliminary Remediation Goal  
SCTL = Soil Cleanup Target Level  
TCE = trichloroethene  
TRPH = total recoverable petroleum hydrocarbons  
TINUS = Tetra Tech NUS, Inc.  
USEPA = United States Environmental Protection Agency  
UST(s) = underground storage tank(s)  
VOC = volatile organic compound

- USEPA Region IX Preliminary Remediation Goals (PRGs) used as Screening Criteria - Over the course of the investigations at this site, USEPA Region IV changed its screening criteria for evaluation of hazardous waste-related sites from USEPA Region III Risk-Based Concentrations (RBCs) to USEPA Region IX PRGs (USEPA, 2002). Therefore, analytical results are now compared to the USEPA Region IX PRGs and FDEP soil cleanup target levels (SCTLs) (FDEP, 1999) for commercial/industrial exposure.
- The individual metal constituents, aluminum, iron, manganese and vanadium, have no direct evidence of site-related use at Site 32 and the process and procedures at this site did not likely contribute to the presence of these inorganic analytes in surface or subsurface soil. Additionally, the site-specific values for these inorganics are within the range of levels found at NAS Whiting Field and of naturally occurring levels throughout the southeastern United States. The RI for NAS Whiting Field Site 40, Basewide Groundwater, contains the appendix "Inorganics in Soil at NAS Whiting Field" presenting the technical basis for this determination. Considering the information presented above, aluminum, iron, manganese and vanadium are not considered chemicals of potential concern (COPCs) for Site 32 surface and subsurface soils.

The FSA for this site included a revised HHRA, and a revised COC selection. Additionally, the FSA evaluated the impact of these changes on the remedial alternatives for surface and subsurface soils identified in the original FS. The following constituents were added as COCs for Site 32 as a result of sampling conducted during the UST removals: TCE, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and benzo(a)pyrene. In summary, the addition of these subsurface soil COCs has resulted in no significant changes to the CERCLA evaluation of remedial alternatives for Site 32.

A Proposed Plan was published in June 2001 based on the findings of the RI and FS. This Proposed Plan for surface and subsurface soils proposed LUCs, an alternative evaluated in the FS and modified to eliminate arsenic remediation (surface soil removal) and UST removal. Because conditions changed, risk screening criteria changed, and other determinations were made since the original FS was prepared, the Navy and USEPA determined a revised HHRA was necessary. The FSA presented the results of the revised HHRA. The FSA stated the selection of Alternative 2 (LUCs and ECs) as the preferred remedy for surface and subsurface soils at Site 32 remains unchanged.

Site 32 has undergone several phases of investigations since 1985. Table 2-1 presents a summary of these activities.

NAS Whiting Field presently consists of two air fields (North and South Fields) and serves as a naval aviation training facility providing support facilities for flight and academic training. No change is anticipated in the future land use for Site 32.

### **2.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION**

The RI report (TtNUS, 1999), the FS (TtNUS, 2001a), the Proposed Plan (TtNUS, 2001b), and the FSA (TtNUS, 2004) for Site 32 were made available to the public for review in July 2001 and August 2004. These documents and other Installation Restoration (IR) program information are contained within the Administrative Record in the Information Repository located at the West Florida Regional Library, Milton, Florida.

The notice of availability of site-related documents (RI, FS, and Proposed Plan) in the Pensacola News Journal and the Santa Rosa Press Gazette on 1 July and 30 June 2001, respectively, targeted the communities closest to NAS Whiting Field. The availability notice presented information on the site related documents for Site 32 and invited community members to submit written comments on the Proposed Plan.

A public comment period was held from 12 July through 11 August 2001, to solicit comments on the Proposed Plan (TtNUS, 2001b). The comment period included an opportunity for the public to request a public meeting; however, a public meeting was not held because one was not requested. The site-related documents were placed in the Information Repository and were made available to the public for review. As indicated in Appendix A, Responsiveness Summary, no public comments were received and no public meeting was requested.

### **2.4 SCOPE AND ROLE OF REMEDIAL ACTION SELECTED FOR SITE 32**

As with many Superfund sites, the problems are complex at NAS Whiting Field. Site 32, the subject of this ROD, addresses contamination in surface and subsurface soils and presents the final response action as ECs and LUCs. The groundwater at NAS Whiting Field has been designated as a separate site (Site 40, Basewide Groundwater) and is not addressed in this ROD.

### **2.5 SITE CHARACTERISTICS**

Site 32 is approximately 3.5 acres in size and is characterized by concrete, asphalt, buildings, small areas of mowed turfgrass, and heavy human and aircraft activity. The site is flat, with very little topographical relief.

### 2.5.1 Nature and Extent of Contamination

Historical aerial photographs and engineering drawings, provided by the Navy, were evaluated during the planning phases of the RI. The objective of this evaluation was to determine the operational history of the site and to verify earlier historical accounts.

As part of the RI conducted for Site 32, data were collected to determine the nature and extent of releases of site-specific contaminants in surface and subsurface soils, to identify potential pathways of migration in surface and subsurface soil, and to evaluate risks to human and ecological receptors. The receptors evaluated in the HHRA and ERA are discussed in the RI.

Investigations prior to the UST removal project at Site 32 indicated contamination at the site posed unacceptable risks to human receptors from exposure to surface and subsurface soil for a potential future residential land-use scenario. Based on commercial/industrial land use, the original FS identified total recoverable petroleum hydrocarbons (TRPH) in surface and subsurface soils as the only COCs. Based on changed conditions, changed risk screening criteria and other determinations made since the original FS was submitted, an FSA (TtNUS, 2004) was conducted. As discussed in Section 2.2 of the ROD, those changes include the following:

- The abandoned USTs and a small amount of soil at Site 32 were removed in September 2000. Confirmation subsurface soil sampling identified several contaminants at concentrations exceeding regulatory screening levels.
- Observed arsenic values were determined to represent naturally occurring levels.
- USEPA Region IX PRGs were used as screening criteria.
- Observed values for aluminum, iron, manganese and vanadium were determined to represent naturally occurring levels; these selected inorganic analytes are not considered COPCs for Site 32 surface and subsurface soils.

Based upon activities undertaken and determinations made since the original FS was prepared, as discussed in Section 2.2, a revised HHRA was conducted. Based on the results of the revised HHRA, the FSA concluded Alternative 2, ECs and LUCs for surface and subsurface soils, remains the preferred remedy for Site 32. Therefore, this ROD documents the selected RA for Site 32 as ECs and LUCs for surface and subsurface soils. The groundwater at NAS Whiting Field has been designated as a separate site (Site 40, Basewide Groundwater) and is not addressed in this ROD.

#### **2.5.1.1 Surface Soil**

Surface soil sampling was conducted at Site 32 to determine the nature and extent of contamination at the site and to assess whether or not surface soil could potentially serve as an exposure pathway to human or ecological receptors. Constituents detected in surface soil at Site 32 included volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), TRPH, pesticides, polychlorinated biphenyls (PCBs), and inorganic analytes. A complete list of all constituents analyzed for during the RI activities and their detected concentrations in surface soil is available in the RI report (TtNUS, 1999).

The original FS identified TRPH as the only surface soil COC exceeding FDEP SCTL chemical-specific criteria for the current and anticipated future commercial/industrial use of the site. The locations are outside the area excavated during the UST removal project. The estimated area of TRPH-contaminated surface soil exceeding the cleanup goal (CG) is 2,100 square feet with an estimated volume of 156 cubic yards.

Figure 2-2 shows the estimated extent of surface soil contamination exceeding the chemical-specific criteria for the current and anticipated future commercial/industrial use of the site.

#### **2.5.1.2 Subsurface Soil**

Subsurface soils sampling was conducted at Site 32 to determine the vertical extent of contamination and to assess whether or not subsurface soils could potentially serve as an exposure pathway to human or ecological receptors. Constituents detected in subsurface soils at Site 32 include VOCs, SVOCs, TRPH, and inorganic analytes. A complete list of all constituents analyzed during the RI activities and their detected concentrations in subsurface soils is available in the RI report (TtNUS, 1999).

The FSA included a re-evaluation of the constituents present in subsurface soil using the post-removal analytical data and the RI data. Post-removal evaluation of constituents present in the subsurface identified the following constituents exceeding FDEP SCTLs for direct commercial/industrial exposure or USEPA Region IX PRGs risk-based human health screening values for commercial/industrial land use: TCE; 1,2,4 trimethylbenzene; 1,3,5 trimethylbenzene; benzo(a)pyrene; and TRPH. Benzo(a)pyrene was the principal carcinogenic polynuclear aromatic hydrocarbon (cPAH) detected; however, all cPAHs detected in soil at Site 32 were regarded as a family of compounds and their concentrations were expressed in terms of benzo(a)pyrene equivalents (BaPEqs). Figure 2-2 shows the estimated extent of subsurface soil contamination exceeding the chemical-specific criteria for the current and anticipated future commercial/industrial use of the site.

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## **2.5.2      Ecological Habitat**

Site 32 is severely limited in the quantity and quality of habitat for ecological receptors because it is heavily industrialized and is characterized by concrete, buildings, small areas of mowed turfgrass, heavy human and aircraft activity. Most importantly, the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the base.

## **2.5.3      Migration Pathways**

TRPH in surface soil and TCE, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, BaPEq, and TRPH detected in subsurface soils are the primary COCs at Site 32. The primary agents of migration acting on soil include wind, water, and human activity. Soil can also act as a source medium, allowing the COCs to be transported to other media.

Transport of COCs from soil via wind is not expected to be a major transport mechanism due to the presence of large areas of concrete/asphalt pavement and a small area of vegetation at Site 32. Vegetation and concrete/asphalt pavement are an effective means of limiting wind erosion of soil. Contaminated fugitive dust generated by construction activities, however, is of potential concern.

Humans and, to a lesser extent, ecological receptors are effective at moving soil and can greatly affect the transport of soil-bound chemicals at hazardous waste sites. Under the current use of Site 32, human activity is not a major transport mechanism for the COCs in soil. This condition could change, depending on the future use of Site 32.

The transport of soil by water and, therefore, the aforementioned COCs in soil, via the mechanisms of physical transport of soil or the leaching of constituents from the soil to groundwater, is a potential concern. Soil erosion—the physical transport of soil via surface water runoff—is currently not considered a major mechanism for the transport of the COCs in soil at Site 32 because of (1) the low grade (slope) of the land surface at the site; and, (2) the vegetation or concrete/asphalt pavement covering the site.

The COCs in the soil at Site 32 are likely to remain attached to the soil because they adsorb readily to soil. Leaching of chemicals from the soil to the groundwater, if any, will be evaluated as part of the RI/FS for Site 40, Basewide Groundwater.

## **2.6 SUMMARY OF SITE RISKS**

A risk assessment was completed for Site 32 to predict whether the site would pose current or future threats to human health or the environment if no action were taken. Both an HHRA and an ERA were performed for Site 32 and the results are presented in the RI Report.

A revised HHRA was conducted to evaluate the changed conditions at the site and changes in the regulatory screening criteria. This section of the ROD summarizes the results of the ERA and revised HHRA.

### **2.6.1 HHRA**

An HHRA was conducted to characterize the risks associated with potential exposures to site-related contaminants at Site 32 for human receptors. Details of the HHRA are provided in Chapter 6.0 of the RI Report (TtNUS, 1999). Due to changes discussed above, a revised HHRA was conducted. Details of the revised HHRA are provided in Section 2.2 of the FSA (TtNUS, 2004).

The revised HHRA conservatively estimates the potential risk to human health considering historical data, recent UST removal analytical data, and selected inorganic analytes (arsenic, aluminum, iron, magnesium, and vanadium) being present at naturally occurring concentrations at Site 32. The new UST removal subsurface analytical data was combined with previous subsurface soils analytical data collected from 2 to 15 feet below land surface (bls) to evaluate human health risk due to subsurface soils. The 2 to 15 feet bls depth is considered the normal construction depth evaluated for HHRA's. Additional surface soil analytical data was not collected during UST removal activities; therefore, human health risks due to surface soil were not recalculated. The human health risk due to surface soil remains the same as reported in the RI except the calculated risk due to arsenic is deleted since arsenic is present at naturally occurring concentrations. The major sections of the revised HHRA include: (1) identification of COCs, (2) exposure assessment, (3) toxicity assessment, and (4) risk characterization.

#### **2.6.1.1 Human Health COCs**

The COC selected for surface soil was TRPH. The human health COCs selected for subsurface soil at Site 32 are: TCE, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, BaPEq, and TRPH. These constituents were the focus of the revised risk assessment.

### **2.6.1.2 Exposure Assessment**

Site 32 was evaluated to identify the populations potentially coming into contact with site-related chemicals and the pathways where exposure might occur. Two potential media may be sources of human exposure: surface soil and subsurface soil.

The exposure assessment for the revised HHRA was conducted to identify the pathways of potential exposure, the magnitude of potential exposure, and the frequency and duration of exposure. The regional and site-specific environmental setting of Site 32 is discussed in the RI Report. The site is non-residential and is expected to remain non-residential in the foreseeable future. Given the current and anticipated future use of the site, only a construction (excavation) worker is likely to be exposed to COPCs in subsurface soils at Site 32. Future residential use of the site is not anticipated for military or non-military housing; however, the residential pathway was retained for completeness and comparison purposes.

The following exposure pathways were considered for the revised HHRA:

- Soil ingestion
- Dermal contact
- Inhalation of particulates and volatiles in air

For the revised HHRA, the exposure point concentration (EPC) was considered to be the 95 percent upper confidence level (UCL) of the arithmetic mean concentration for either a normal or lognormal distribution. If a best-fit test indicated the data were neither normally or lognormally distributed, a nonparametric method was used to determine the 95 percent UCL. The maximum detected concentration was used if the sample size was less than 10.

### **2.6.1.3 Toxicity Assessment**

Toxicity assessment is a two-step process whereby the potential hazards associated with route-specific exposure to a given constituent are (1) identified by reviewing relevant human and animal studies; and (2) quantified through analysis of dose-response relationships. The USEPA has calculated numerous toxicity values having undergone extensive review within the scientific community. These values [published in the Integrated Risk Information System (IRIS) and other journals] are used in the baseline evaluation to calculate both carcinogenic and non-carcinogenic risks associated with each COPC and rate of exposure.

In this revised HHRA, the toxicity assessment incorporates those toxicity values used to derive the USEPA Region IX PRGs and FDEP SCTLs. The 95 percent UCL of each COPC was used as the EPC for the risk-screening, unless the sample size was less than 10. However, USEPA Region IV guidance (USEPA, 1995) was followed to determine a BaPEq concentration representative of total cPAHs in each sample by using a Toxicity Equivalency Factor (TEF) to convert each PAH concentration to a BaPEq concentration. As with other analytes, the maximum BaPEq concentration in an environmental media was used to estimate potential risks.

#### **2.6.1.4 Risk Characterization**

In the final step of the risk assessment, the results of the exposure and toxicity assessments are combined to estimate the overall risk from reasonable maximum exposure to site contamination. For cancer-causing constituents, risk is estimated to be a probability. For example, a particular exposure to constituents at a site may present a 1 in 1,000,000 (or 1.0E-06) chance of development of cancer over an estimated lifetime of 70 years. The USEPA allowable carcinogen risk range is 1.0E-04 to 1.0E-06, and the FDEP acceptable excess lifetime cancer risk (ELCR) is 1.0E-06 (62-780 F.A.C.).

For non-carcinogenic causing constituents, the dose a receptor may be exposed to is estimated and compared to the reference dose (RfD). The RfD is developed by USEPA scientists and represents an estimate of the amount of a chemical a person (including the most sensitive persons) could be exposed to over a lifetime without developing adverse effects. The measure of the likelihood of adverse effects other than cancer occurring in humans is called the Hazard Index (HI). An HI greater than 1.0 suggests adverse effects are possible.

Risk characterization evaluates the potential for adverse effects from exposure to COPC concentrations in environmental media by integrating information developed during the exposure and toxicity assessments. As noted previously, the exposure and toxicity assessments for this human health risk screening assessment are largely addressed during the development of the PRGs and SCTLs.

Risk characterization for the risk-screening of Site 32 consists of calculating a ratio between the maximum detected concentration of a constituent in an environmental medium and the PRG and soil screening levels (SSLs) developed for construction workers using methodology presented in Supplemental Guidance For Developing Soil Screening Levels For Superfund Sites, December 2002, Office of Solid Waste and Emergency Response (OSWER) 9355.4-24. Carcinogenic and non-carcinogenic effects were evaluated separately. Ratios were calculated for both the residential land-use scenario and a construction worker land-use scenario. The human health risk estimates produced for the residential

scenario are not reflective of actual current or reasonably anticipated future conditions at the sites under investigation because the current and anticipated land use at the sites is military industrial, and the only likely exposure to subsurface soils at Site 32 would be by a construction (excavation) worker. However, the risk characterization based on exposure assumptions reflecting a residential land-use scenario is conservative and is helpful for information and comparison purposes.

## **2.6.2      ERA**

The purpose of the ERA for Site 32 was to evaluate the potential for adverse effects to ecological receptors at the North Field Maintenance Hangar. A conservative screening level ERA was performed according to the most recent USEPA guidance. Components of the screening level ERA included (1) preliminary problem formulation; (2) preliminary ecological effects evaluation; (3) preliminary exposure estimate; and (4) preliminary risk calculation. In addition, Step 3A, Refinement of Chemicals of Potential Concern, was also performed in accordance with USEPA and Navy ERA guidance. The ERA completed for Site 32 considered exposure of terrestrial plants, terrestrial invertebrates, and wildlife receptors to chemicals in surface soil at the site. All constituents detected in surface soil at Site 32 including VOCs, SVOCs, TRPH, pesticides, and inorganic analytes were evaluated during the screening level assessment. A complete list of all constituents sampled during the RI and their concentrations in surface soil, if detected, is available in the RI report (TtNUS, 1999).

The site is severely limited in the quantity and quality of habitat because the site is almost entirely covered by concrete and buildings. The area is surrounded by intensive development except for some turfgrass north of the site. As a result of heavy human activity, vehicle and aircraft traffic and noise, terrestrial wildlife is deterred from using the site. Most importantly, the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the base. Therefore, reduction in growth, survival, and reproduction of small mammal and bird populations at and near the site due to chromium or other chemicals evaluated in the ERA is unlikely. For these reasons, potential risks are acceptable and further ecological study at Site 32 is unwarranted.

## **2.6.3      Risk Summary**

### **2.6.3.1      HHRA**

Actual or threatened releases of hazardous substances from Site 32 present a current and future potential threat to public health and welfare.

The ELCR calculated for the hypothetical future resident and the typical construction worker (based on PRGs and construction worker SSLs), are 4.75E-05 and 9.4E-07, respectively. The risk estimate for the

construction worker does not exceed the USEPA target range often used to evaluate the need for environmental remediation, or the State of Florida benchmark of  $1.0\text{E-}06$  [Florida Administrative Code (F.A.C.) 62-780]. The risk estimate for the hypothetical future resident does exceed the State of Florida benchmark of  $1.0\text{E-}06$ , although it is within the USEPA target risk range. BaPEq is the main risk driver; however, benzo(a)pyrene and other cPAHs were detected in only four of 28 total samples.

The total HI exceeds unity for the hypothetical future resident ( $\text{HI}=3.71$ ), but does not exceed unity for the construction worker ( $\text{HI}=0.45$ ). HIs calculated on a target organ specific basis for the resident and for the construction worker do not exceed 1.0.

#### **2.6.3.2 Uncertainty Analysis**

Uncertainty in risk evaluation is discussed in the RI Report (TtNUS, 1999). Uncertainties associated with the revised HHRA for subsurface soils at Site 32 are discussed in the FSA (TtNUS, 2004). The following summary lists uncertainties relative to this revised HHRA:

- Overall site-related risks from soil may be overestimated by the background screening process.
- Surrogate values were chosen for constituents detected at the site not having screening levels. Surrogates were chosen to be conservative and are not expected to add significantly to the underestimation of risk.
- The method used to calculate the BaPEq concentration for cPAHs overestimates the risk.
- There was no underestimation of risks by omission of exposure routes.
- Risk is likely overestimated for the general populations exposed to the constituents in the environmental media at the site.

#### **2.6.3.3 ERA**

Site 32 is severely limited in the quantity and quality of habitat because the site is heavily industrialized, and the site comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the base. Potential risks are acceptable and further ecological study at Site 32 is unwarranted.

### **2.7 REMEDIAL ACTION OBJECTIVES**

The RAOs for Site 32 are:

- To prevent residential development on the site.
- To protect the industrial worker from carcinogenic and non-carcinogenic risks associated with

incidental ingestion of, inhalation of, and dermal contact with contaminated soils.

- To comply with federal and state applicable or relevant and appropriate requirements (ARARs) and to be considered (TBC) guidance in accordance with accepted USEPA and FDEP guidelines.

The RAOs for this site are formulated based on the following criteria:

- Unacceptable human health risk exists for direct exposure to surface or subsurface soils based on the current and anticipated future commercial/industrial use of the site.
- FDEP SCTLs (commercial/industrial land use).
- USEPA Region IX PRGs (commercial/industrial land use).

The current and future use of the property at this site remains industrial, and the current and future receptors are occupational and construction workers.

#### 2.7.1 Cleanup Goals

Cleanup Goals (CGs) establish acceptable exposure levels protective of human health and the environment. The following soil CGs were established for the Site 32 COCs:

COC	CG
TCE	0.11 mg/kg
1,2,4-trimethylbenzene	8.8 mg/kg
1,3,5-trimethylenzene	6.97 mg/kg
BaPEq	0.21 mg/kg <sup>(1)</sup>
TRPH	2,500 mg/kg <sup>(2)</sup>

(1) USEPA Region IX PRG for direct contact exposure, industrial

(2) FDEP SCTL for direct exposure, industrial

The CGs were used to determine the areas and volumes of surface and subsurface soils with the potential to impact human health under a commercial/industrial land-use scenario. The estimated area of TRPH-contaminated surface soil exceeding the CG is 2,100 square feet with an estimated volume of 156 cubic yards. The estimated area of contaminated subsurface soils exceeding the CGs is 3,940 square feet with an estimated volume of 2,340 cubic yards. A small amount (299 cubic yards) of TRPH-contaminated soil was removed during the UST removal project in September 2000 (CCI, 2001).

The estimated areas where surface soil has the potential to impact human health are shown on Figure 2-2. Because these areas are covered with concrete or asphalt, preventing exposure to contaminated soil, surface soil removal is not required.

## **2.8 DESCRIPTION OF ALTERNATIVES**

As stated in the Proposed Plan (TtNUS, 2001b) and in previous sections of this document, no action will be taken to remediate the naturally occurring levels of arsenic in surface or subsurface soils at Site 32. The four abandoned USTs and a small amount of TRPH-contaminated soil at Site 32 were removed in September 2000; therefore, the four remedial alternatives evaluated in the FS (TtNUS, 2001a) were re-evaluated in the FSA (TtNUS, 2004). The FSA modified the original alternatives presented in the FS by deleting the UST removal from Alternatives 2, 3, and 4, and surface soil removal from Alternative 2. Cleanup alternatives were developed by the Navy, the USEPA, and the FDEP. The four remedial alternatives are listed below and summarized in Table 2-2.

**Alternative 1: No Action**

**Alternative 2: ECs and LUCs**

**Alternative 3: Soil Venting and LUCs**

**Alternative 4: Surface and Subsurface Soil Removal and LUCs**

These alternatives were developed in consideration of site risks, the anticipated future commercial/industrial land use, federal and state ARARs and guidance (see Table 2-7), and the very limited ecological habitat at Site 32. These alternatives primarily address protection of human health because, as discussed previously, potential risks to ecological receptors are acceptable. All alternatives include a provision for five-year site reviews to verify the selected alternative continues to be protective of human health and the environment. A detailed description of the four alternatives is provided below.

**Alternative 1:** No Action. This alternative [estimated net present worth (NPW) cost of \$0] is required by CERCLA as a baseline for comparison with the other alternatives. The No Action alternative assumes no remedial action would occur and establishes a basis for comparison with the other alternatives. No remedial action, treatment, LUCs, or monitoring of site conditions would be implemented under the No Action alternative. Alternative 1 does not meet chemical-specific ARARs, and there are no action-specific ARARs for this alternative.

TABLE 2-2

**SUMMARY OF REMEDIAL ALTERNATIVES EVALUATED  
RECORD OF DECISION  
SITE 32, NORTH FIELD MAINTENANCE HANGAR  
NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA**

Alternative	Description of Key Components	Cost <sup>(1)</sup>	Duration <sup>(2)</sup>
<b>Alternative 1: No Action</b>	No remedial actions are performed at Site 32	\$0	30 Years
<b>Alternative 2: ECs and LUCs</b>	Post warning signs.  Implementation of ECs and LUCs will address contaminants in soil above residential standards. An RD will be submitted to USEPA and FDEP and will detail the implementation plans to maintain current soil cover and to prohibit residential use of the property.	\$82,000	30 Years
<b>Alternative 3: Soil Venting and LUCs</b>	Develop project plans for in situ soil venting to include delineation/confirmatory sampling.  Install, operate, and maintain an in situ soil venting system.  Post warning signs.  Implementation of LUCs will address contaminants in soil above residential standards. An RD will be submitted to USEPA and FDEP and will detail the implementation plans to maintain the site for nonresidential purposes.	\$238,000	30 years
<b>Alternative 4: Surface and Subsurface Soil Removal (exceeding CGs) and LUCs</b>	Develop project plans for excavation to include delineation/confirmatory sampling.  Demolition and removal/disposal of asphalt and concrete pavement covering areas of soil exceeding CGs.  Excavate surface and subsurface soils exceeding commercial/industrial land use CGs (including areas covered with concrete/asphalt).  Backfill excavated areas with clean soil.  Replace concrete or asphalt pavement removed to perform the soil excavation and provide a vegetative cover for nonpaved areas.  Post warning signs.  Implementation of LUCs will address contaminants in soil above residential standards. An RD will be submitted to USEPA and FDEP and will detail the implementation plans to maintain the site for nonresidential purposes.	\$616,000	30 Years

<sup>(1)</sup> Net present worth costs rounded to the nearest thousand dollars.

<sup>(2)</sup> A period of 30 years was chosen for present worth costing purposes only. Under CERCLA, remedial actions must continue as long as hazardous substances, pollutants, or contaminants remain at a site.

Notes: CG(s) = Cleanup goal(s)

ECs = Engineering controls to prohibit digging into or disturbing existing concrete or asphalt covered areas on the site

FDEP = Florida Department of Environmental Protection

LUC(s) = land use control(s)

RD = Remedial Design

USEPA = United States Environmental Protection Agency

**Alternative 2:** ECs and LUCs. (estimated total NPW cost \$82,000): ECs are to prohibit the disturbance of existing soil covers and LUCs are to prohibit future use of the site for residential purposes precluding full-time human contact with contaminated surface or subsurface soils. Contaminated soil (contaminants exceeding commercial/industrial soil cleanup levels) covered with concrete or asphalt would not require soil removal because the existing cover material is a barrier and is considered an EC preventing exposure to the contaminated soil, as long as the concrete/asphalt remains in place and is properly maintained. Future and current land-use concerns are addressed by the LUCs. Alternative 2 achieves compliance with chemical-specific ARARs by implementing ECs and LUCs to prevent exposure to surface and subsurface soils exceeding CGs. Compliance with action-specific ARARs would be achieved by proper selection, implementation, and maintenance of LUCs. Alternative 2 includes an estimated present worth cost of \$60,000 for O&M (over a 30-year monitoring period) and an estimated capital cost of \$22,000.

**Alternative 3:** Soil venting and LUCs. This alternative (estimated total NPW cost \$238,000) includes installation of an in situ soil venting system to treat organics in subsurface soils, and places restrictions on the use of the site to nonresidential activities involving less than full-time human contact with the soil. Current and future land-use concerns are addressed by LUCs. Alternative 3 achieves compliance with chemical-specific ARARs by treating organics in subsurface soils and implementing LUCs to prevent exposure to remaining surface and subsurface soils exceeding CGs; however, compliance for the relatively persistent BaPEq will take considerable time. Compliance with action-specific ARARs would be achieved by proper design and execution of RA activities and LUCs. Alternative 3 includes an estimated present worth cost of \$150,000 for O&M (over a 30-year monitoring period) and an estimated capital cost of \$88,000.

**Alternative 4:** Surface and subsurface soils removal and LUCs. This alternative (estimated total NPW cost \$616,000) involves removal and off-site disposal of surface and subsurface soils exceeding levels allowed for Florida commercial/industrial sites and LUCs, as described above. Alternative 4 meets chemical-specific ARARs for surface and subsurface soils. Compliance with action-specific ARARs would be achieved by proper design and execution of contaminated soil removal and off-site disposal activities. Alternative 4 includes an estimated present worth cost of \$56,000 for O&M (over a 30-year monitoring period) and an estimated capital cost of \$560,000.

## 2.9 SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

This section evaluates and compares each of the soil remedial alternatives with respect to the nine criteria outlined in Section 300.430(e) of the NCP. These criteria are categorized as threshold, primary

balancing, and modifying and are further explained in Table 2-3. A detailed analysis was performed for each alternative using the nine criteria to select a remedy. Table 2-4 presents a summary comparison of these analyses.

## **2.10 SELECTED ALTERNATIVE**

### **2.10.1 Summary of Rationale for Remedy**

The goals of the selected RA are to protect human health and the environment by eliminating, reducing or controlling hazards posed by the site and to meet ARARs. Based upon the consideration of the requirements of CERCLA, the NCP, the detailed analysis of alternatives, FDEP and public comments, Alternative 2 was selected to address surface and subsurface soils contamination at Site 32.

This remedy was selected for the following reasons:

- Although concentrations of COCs remaining in soil exceed CGs they do not present an unacceptable threat to human health or the environment assuming only future commercial or industrial uses are permitted at Site 32 and the existing asphalt/concrete cover is properly maintained.
- Potential ecological risks are acceptable. The site is very limited in quantity and quality of ecological habitat because the site is heavily industrialized and comprises only a small portion of the home ranges of most of the terrestrial wildlife species found on the base.
- The current and future use of the property at this site remains industrial, and the current and future receptors are occupational and construction workers in direct contact with the soil.
- Areas of surface soil contamination are covered with concrete or asphalt, preventing exposure as long as this barrier remains in place.

### **2.10.2 Remedy Description**

The selected RA consists of two major components: (1) ECs and (2) LUCs.

#### **2.10.2.1 Component 1: ECs**

Contaminated surface soil and subsurface soils (contaminants exceeding CGs) covered with concrete or asphalt will not require soil removal because the establishment of this EC will prevent exposure to the contaminated soil. Five-year site reviews will verify the selected alternative continues to be protective of human health and the environment.

**TABLE 2-3**  
**EXPLANATION OF DETAILED ANALYSIS CRITERIA**  
**RECORD OF DECISION**  
**SITE 32, NORTH FIELD MAINTENANCE HANGAR**  
**NAVAL AIR STATION WHITING FIELD**  
**MILTON, FLORIDA**

Criterion	Description
Threshold	<p><b>Overall Protection of Human Health and the Environment.</b> This criterion evaluates the degree each alternative eliminates, reduces, or controls threats to human health and the environment through treatment, engineering methods, or institutional controls (e.g., access restrictions).</p> <p><b>Compliance with State and Federal Regulations.</b> The alternatives are evaluated for compliance with environmental protection regulations determined to be applicable or relevant and appropriate to the site conditions.</p>
Primary Balancing	<p><b>Long-Term Effectiveness and Permanence.</b> The alternatives are evaluated based on their ability to maintain reliable protection of human health and the environment after implementation.</p> <p><b>Reduction of Contaminant Toxicity, Mobility, and Volume Through Treatment.</b> Each alternative is evaluated based on how it reduces the harmful nature of the contaminants, their ability to move through the environment, and the amount of contamination.</p> <p><b>Short-Term Effectiveness.</b> The potential risks to workers and nearby residents posed by implementation of a particular remedy (e.g., whether or not contaminated dust will be produced during excavation), as well as the reduction in risks resulting from controlling the contaminants, are assessed. The length of time needed to implement each alternative is also considered.</p> <p><b>Implementability.</b> Both the technical feasibility and administrative ease (e.g., the amount of coordination with other government agencies needed) of a remedy, including availability of necessary goods and services, are assessed.</p> <p><b>Cost.</b> The benefits of implementing a particular alternative are weighted against the cost of implementation.</p>
Modifying	<p><b>USEPA and FDEP Acceptance.</b> The final Feasibility Study and the Proposed Plan, placed in the Administrative Record, represent a consensus by the Navy, USEPA, and FDEP.</p> <p><b>Community Acceptance.</b> The Navy assesses community acceptance of the selected alternative by giving the public an opportunity to comment on the remedy selection process and the selected alternative and then responds to those comments.</p>

TABLE 2-4  
SUMMARY OF COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES  
RECORD OF DECISION  
SITE 32, NORTH FIELD MAINTENANCE HANGAR  
NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA  
PAGE 1 OF 2

Evaluation Criteria	Soil Alternative 1: No Action	Soil Alternative 2: ECs and LUCs	Soil Alternative 3: Soil venting and LUCs	Soil Alternative 4: Surface and Subsurface Soil Removal and LUCs
Overall Protection of Human Health and Environment	Would not be protective to human receptors exposed to soils at the site.	Would be protective to human receptors. ECs and LUCs would prevent unacceptable potential exposure because of soil cover and residential use would be prohibited. This alternative would include maintenance of the existing asphalt/concrete cover.	Would be protective to human receptors. LUCs would prevent potential future residents from exposure because residential use would be prohibited. In situ treatment of petroleum hydrocarbons in subsurface soils would increase the overall protectiveness of human health and the environment. LUCs would be required to prevent exposure to soils exceeding residential standards.	Would be most protective because all surface and subsurface soils exceeding CGs (commercial/industrial standards) would be removed, eliminating the risk of exposure. LUCs would prevent potential residents from coming into contact with soil exceeding residential standards at the site. Would also provide protection to ecological receptors however, may end up altering the ecological habitat at the site.
Compliance with ARARs and TBCs: Chemical-Specific Location-Specific Action-Specific	Would not comply Not applicable Not applicable	Would comply Not applicable Would comply	Would comply Not applicable Would comply	Would comply Not applicable Would comply
Long-Term Effectiveness and Permanence	Would not have long-term effectiveness and permanence because contaminants would remain on site. Any long-term effectiveness would not be known since monitoring would not occur.	Would provide long-term effectiveness and permanence through cap protections and EC cap protections and LUCs preventing residential development. LUCs would preclude existing asphalt/concrete cover disturbance. Would require long-term management would be administered by the facility through implementing an approved Remedial Design.	Would provide long-term effectiveness and permanence through in situ treatment of organic and LUCs preventing chemical residential development. Would require long-term management and five-year reviews. LUCs would be administered by the facility through implementing an approved RID.	Would provide highest level of long-term effectiveness and permanence by active removal of all impacted soil exceeding commercial/industrial cleanup levels, reducing residual risk from impacted soil left at the site and by implementing LUCs to prevent residential development. Would require long-term management and five-year reviews. LUCs would be administered by the facility through implementing an approved RID.
Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment	Would not achieve reduction of toxicity, mobility, or volume of contaminants through treatment but may achieve some reduction through natural processes.	Would not achieve reduction of toxicity, mobility, or volume of contaminants through treatment but may achieve some reduction through natural processes.	Reduces volume and toxicity of organics in subsurface soils by soil venting, promoting volatilization and biodegradation of organic chemicals. May produce residuals from soil venting off-gas treatment.	Would permanently and significantly reduce mobility of contaminants by excavation, transport, and disposal of impacted soil in a secure, regulated landfill. Provides the greatest reduction of risk through soil removal and off-base disposal. Toxicity of excavated soil may be reduced by treatment at a TSDF.

TABLE 2-4  
SUMMARY OF COMPARATIVE ANALYSIS OF SOIL REMEDIAL ALTERNATIVES  
RECORD OF DECISION  
SITE 32, NORTH FIELD MAINTENANCE HANGAR  
NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA  
PAGE 2 OF 2

Evaluation Criteria	Soil Alternative 1: No Action	Soil Alternative 2: ECs and LUCs	Soil Alternative 3: Soil venting and LUCs	Soil Alternative 4: Surface and Subsurface Soil Removal and LUCs
Short-Term Effectiveness	Would not result in short-term risks to site workers or adversely impact the surrounding community and would not achieve the soil RAOs and CGs.	Would not result in short term risks to site workers or adversely impact the surrounding community and would not achieve the soil CGs.  Estimated time to reach RAOs is less than one year.	Would create potential short term risk to site workers during construction and operation of the in situ soil venting system. These risks are manageable by use of appropriate engineering and construction management controls (wearing of appropriate PPE and the compliance with site-specific health and safety procedures). Environmental impacts (fugitive dust and runoff) are expected to be minimal. Engineering controls would minimize any environmental impacts. The RAOs would be met within less than one year (as soon as the RD is implemented). The estimated time to reach CGs is three years.	Would create short-term risks of worker exposure and potential fugitive dust during excavation, transportation and/or soil cover construction. Would pose potential short-term risks to community members due to spills during transportation of contaminated soil to an off-site landfill. Environmental impacts (fugitive dust and runoff) are expected to be minimal. Engineering controls would minimize any environmental impacts. RAOs and CGs would be met within less than one year.
Implementability	Would be simple to implement because no action.	Would be easily implemented. Would require monitoring of the horizontal barriers for removal or other damage and potential exposure. Equipment, specialists, and materials for this alternative are readily available.	Would be easily implemented. Would require monitoring of the horizontal barriers for removal or other damage and potential exposure. This remedial technology is proven and reliable. Equipment, specialists, and materials for this alternative are readily available.	Would be easily implemented. This remedial technology is proven and reliable. Would require use of a TSDF, which are available and have sufficient capacity to meet the requirements of this alternative. Equipment, specialists, and materials for this alternative are readily available.
Cost:				
Capital	\$0	\$22,000	\$88,000	\$560,000
NPW O&M (30 year)	\$0	\$60,000	\$150,000	\$56,000
Total cost, NPW (30 year)	\$0	\$82,000	\$238,000	\$616,000

CG = Cleanup Goal  
ECs = Engineering controls to prohibit digging into or disturbing existing concrete or asphalt covered areas on the site  
LUC = Land Use Control  
NPW = Net Present Worth  
PPE = personal protection equipment  
RAO = Remedial Action Objective  
RD = Remedial Design  
TSDF = Transport, Storage, and Disposal Facility

The performance objectives of the ECs are:

- To prohibit digging into or disturbing existing concrete or asphalt cover areas on the site.
- To prevent the disturbance of the concrete/asphalt barriers in areas with contaminated surface and subsurface soils.

#### **2.10.2.2 Component 2: LUCs**

Soil contamination remains at Site 32 at concentrations precluding unrestricted reuse; therefore, the remedy includes LUCs to address unacceptable risk. These LUCs will be implemented to prohibit residential development and use precluding unacceptable risks from exposure to contaminated soil. The boundaries of Site 32 and the area to be covered by the LUCs are shown in Figure 2-3. The LUCs cover only surface and subsurface soils. The LUC performance objectives for Site 32 are:

- Maintain the integrity of any current or future remedial action.
- Prohibit the development and use of the property for residential housing, elementary and secondary schools, child care facilities, and playgrounds.

The LUCs will:

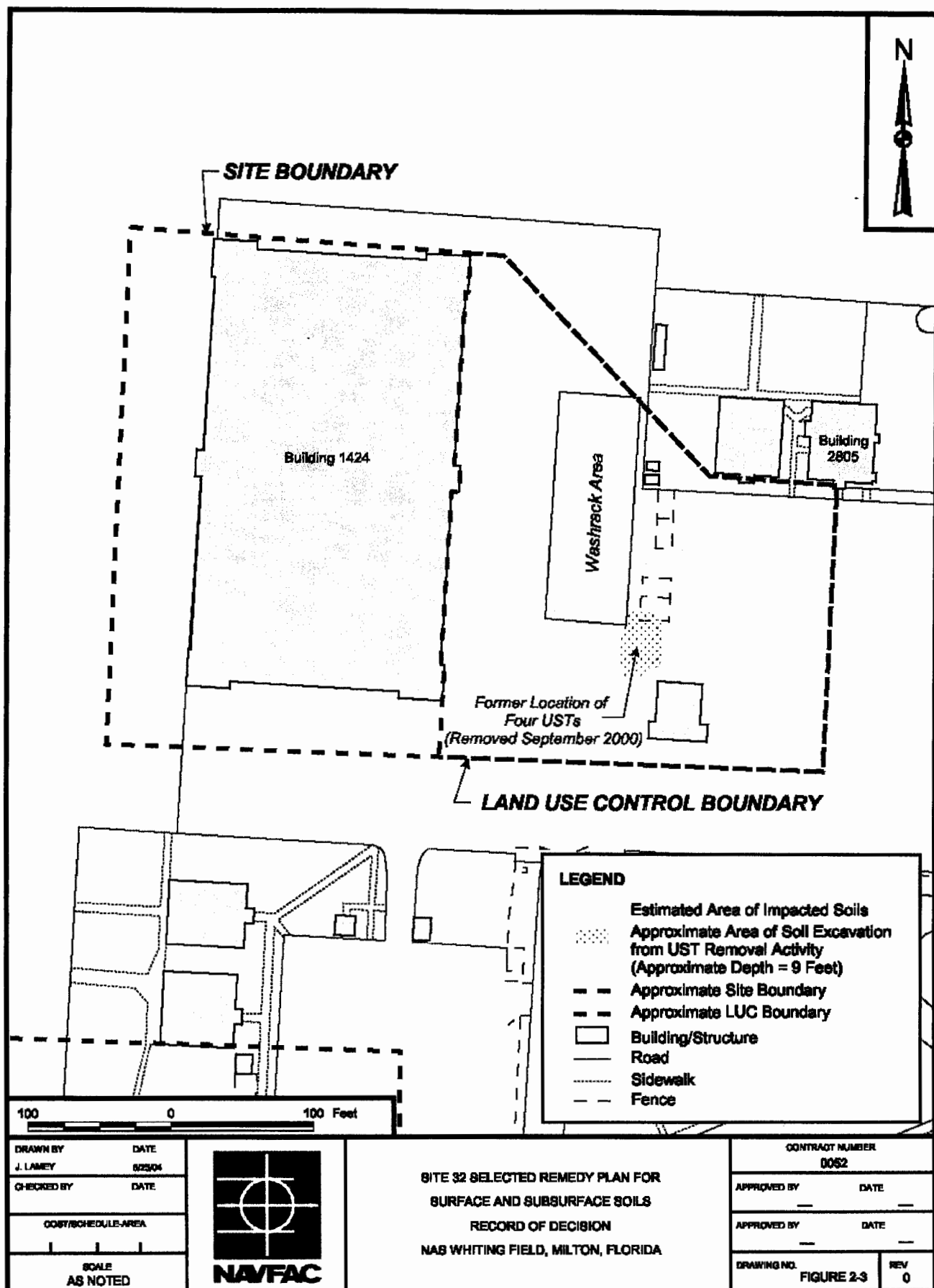
- Restrict future use of the site to nonresidential activities involving less than full-time human contact with surface and subsurface soils.

The LUCs shall be maintained for as long as they are required to prevent unacceptable exposures to contaminated soil or to preserve the integrity of the remedy. The Navy or any subsequent owners shall not modify, delete, or terminate any LUC without USEPA or FDEP concurrence. The LUCs shall be maintained until the concentrations of hazardous substances in the soils have been reduced to levels allowing unlimited exposure and unrestricted reuse.

The Navy will be responsible for implementing, inspecting, reporting, and enforcing the LUCs described in this ROD in accordance with the approved LUC RD. Although the Navy may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the Navy shall retain ultimate responsibility for remedy integrity. Should this LUC remedy fail, the Navy will ensure the appropriate actions are taken to re-establish its protectiveness and may initiate legal action to either compel action by a third party(ies) and/or to recover the Navy's costs for remediating any discovered LUC violation(s).

The LUC RD will be prepared as the LUC component of the selected RA. Within 90 days of ROD signature, the Navy shall prepare in accordance with USEPA guidance and submit to the USEPA and FDEP, an RD containing LUC implementation and maintenance actions, including periodic inspections.

When the selected RA is implemented, predicted site risks will be minimized.



### **2.10.3      Summary of Estimated Remedy Costs**

The total estimated NPW cost of Alternative 2 is \$82,000 over a 30-year period, based upon an annual discount rate of 6 percent. Table 2-5 summarizes the cost estimate data for Alternative 2. The information in the table is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum in the Administrative Record file, an explanation of significant differences, or a ROD amendment. The estimate is an order-of-magnitude engineering cost estimate expected to be within a range of +50 to -30 percent of the actual project cost.

### **2.10.4      Expected Outcome of the Selected Remedy**

Immediately upon implementation, Site 32 will be environmentally safe for its current and intended future use as a commercial/industrial facility, as long as the ECs and LUCs are in place and observed.

## **2.11      STATUTORY STATEMENT**

The alternative selected for implementation at Site 32 is consistent with the Navy's IR program, CERCLA, and NCP. The selected remedy for surface and subsurface soils is protective of human health and the environment.

The selected remedy eliminates, reduces, or controls risks by implementing ECs and LUCs to (1) restrict future use of the site to nonresidential activities involving less than full-time human contact with surface and subsurface soils, and (2) maintain the existing concrete/asphalt barriers in areas with contaminated surface soil. No unacceptable short-term risks or cross-media impacts will be caused by implementation of the remedy. Comparison of the selected remedy to the nine USEPA evaluation criteria is summarized in Table 2-6.

The selected remedy achieves compliance with chemical-specific ARARs by implementing ECs and LUCs to prevent exposure to surface and subsurface soils exceeding CGs. Compliance with action-specific ARARs will be achieved by the proper selection, implementation, and maintenance of ECs and LUCs. Table 2-7 provides a summary of ARARs and guidance documents specific to the selected remedy.

The selected remedy is cost effective and provides a balance between cost and overall effectiveness in the protection of human health and the environment. Permanent solutions and treatment are used to the

TABLE 2-5

**SELECTED ALTERNATIVE COST ESTIMATE SUMMARY  
RECORD OF DECISION  
SITE 32, NORTH FIELD MAINTENANCE HANGAR  
NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA**

<b>CAPITAL COSTS</b>	
<b>Description</b>	<b>Cost</b>
1. Project Planning	\$3,634
2. Mobilization/Demobilization	\$0
3. Decontamination	\$0
4. Site Preparation	\$0
5. Excavation/Backfill	\$0
6. Off-site Transportation and Disposal	\$0
7. Site Restoration	\$0
8. EC and LUC Implementation	<u>\$15,160</u>
Subtotal	\$18,794
Contingency Allowance (10%)	\$1,879
Engineering/Project Management (5%)	<u>\$940</u>
<b>Total Capital Cost</b>	<b>\$21, 613</b>
<b>OPERATION AND MAINTENANCE COSTS</b>	
<b>Description</b>	<b>Cost</b>
<b>Total Operation and Maintenance Costs</b>	<b><u>\$60,573</u></b>
<b>Total Net Present Worth Cost for Selected Alternative</b>	<b>\$82,186</b>

TABLE 2-6

**SUMMARY EVALUATION OF SELECTED REMEDY  
RECORD OF DECISION  
SITE 32, NORTH FIELD MAINTENANCE HANGAR  
NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA**

Evaluation Criteria	Assessment
Overall Protection of Human Health and the Environment	Human receptors, namely residents, will be protected if this alternative is implemented. Regulatory controls (i.e., ECs and LUCs) will prohibit potential future residents from exposure to the site because residential use of the site will be restricted under the proposed LUCs. ECs and LUCs will also maintain the concrete/asphalt barriers in areas with contaminated surface soil exceeding commercial/industrial soil cleanup criteria.
Compliance with ARARs	This alternative achieves compliance with chemical-specific ARARs and TBC guidance by implementing ECs and LUCs to prevent exposure to surface and subsurface soils exceeding CGs. It meets action-specific ARARs by proper selection and maintenance of the LUCs. Meets all other NAS Whiting Field requirements.
Long-Term Effectiveness	The risks to future workers based on exposure to surface and subsurface soils at the site is addressed by ECs and LUCs. The long-term effectiveness and permanence of these controls will be controlled by the installation through the implementation of an approved RD. Administrative actions proposed in this alternative (e.g., 5-year site reviews) would provide a means of evaluating the effectiveness of the alternative. These administrative actions are considered to be reliable controls, as long as the facility implements the approved RD.
Reduction of Toxicity, Mobility, and Volume through Treatment	This alternative does not treat the soil contaminants and thus does not reduce the toxicity, mobility, or volume through treatment. A small amount (299 cubic yards) of TRPH-contaminated soil was removed from the site during the UST Removal Project. Of the 299 cubic yards, 16 cubic yards were shipped as hazardous waste due to presence of tetrachloroethene and lead. The soil was disposed of at approved landfills, thus removing a potential source of contamination.
Short-Term Effectiveness	The implementation of this alternative is estimated to take less than 1 year. No adverse impacts are expected as a result of implementing ECs and LUCs.
Implementability	Would be easily implemented. Would require monitoring of the horizontal barriers for removal or other damage and potential exposure. Equipment, specialists, and materials for this alternative are readily available.
Cost	The total present worth cost of Alternative 2 is \$82,000.
Federal and State Acceptance	The USEPA and the FDEP have concurred with the selected remedy.
Community Acceptance	The community was given the opportunity to review and comment on the selected remedy. No comments were received and no public meeting was requested (see Appendix A). Therefore, the selected RA proposed in the Proposed Plan was not altered.
<p>Notes: ARAR = applicable or relevant and appropriate requirement  ECs = Engineering controls to prohibit digging into or disturbing existing concrete or asphalt covered areas on the site  FDEP = Florida Department of Environmental Protection  LUC = land use control  RA = remedial action  RD = remedial design  TBC = to be considered  TRPH = total recoverable petroleum hydrocarbons  USEPA = United States Environmental Protection Agency  UST = underground storage tank</p>	

TABLE 2-7

**SUMMARY OF FEDERAL AND STATE ARARs AND GUIDANCE SPECIFIC TO ALTERNATIVE 2  
RECORD OF DECISION  
SITE 32, NORTH FIELD MAINTENANCE HANGAR  
NAVAL AIR STATION WHITING FIELD  
MILTON, FLORIDA  
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Authority	Requirement	Citation	Status / Type	Synopsis	Evaluation/Action To Be Taken
Federal Regulatory Requirement	USEPA Region IX Preliminary Remedial Goals (PRGs)		Relevant and Appropriate / Chemical-Specific	These guidelines aid in the screening of constituents in soil. USEPA has requested use of these PRGs as ARARs at NAS Whiting Field.	Will be used to identify constituents of concern (COCs) and for the development of soil cleanup goals at this site.
Federal Regulatory Requirement	Cancer Slope Factors (CSFs)		TBC / Chemical-Specific	Guidance values used to evaluate the potential carcinogenic hazard caused by exposure to contaminants.	Were considered for development of human health protection PRGs for soil at this site.
Federal Regulatory Requirement	Reference Doses (RfDs)		TBC / Chemical-Specific	Guidance values used to evaluate the potential noncarcinogenic hazard caused by exposure to contaminants.	Were considered for development of human health protection PRGs for soil at this site.
State Regulatory Requirement	Contaminant Cleanup Target Levels Rule [Soil Cleanup Target Levels (SCTLs)]	F.A.C. Chapter 62-777	TBC / Chemical-Specific	This rule provides guidance for soil cleanup levels developed on a site-by-site basis.	Will be used to identify COCs and for the development of soil cleanup goals at this site.
Federal Regulatory Requirement	Occupational Safety and Health Administration (OSHA), General Industry Standards	29 CFR Part 1910	Applicable / Action Specific	Requires establishment of programs to assure worker health and safety at hazardous waste sites, including employee-training requirements.	These regulations will apply to all soil remedial activities at Site 32.
Federal Regulatory Requirement	OSHA, Occupational Health and Safety Regulations	29 CFR Part 1910, Subpart Z	Applicable / Action Specific	Establishes permissible exposure limits for workplace exposure to a specific listing of chemicals.	Will be applied to control worker exposure to OSHA hazardous chemicals during remedial activities.
Federal Regulatory Requirement	OSHA, Recordkeeping, Reporting, and Related Regulations	29 CFR Part 1904	Applicable / Action Specific	Provides recordkeeping and reporting requirements applicable to remedial activities.	These requirements will apply to all site contractors and subcontractors and will be followed during all site work.
Federal Regulatory Requirement	OSHA, Health and Safety Standards	29 CFR Part 1926	Applicable / Action Specific	Specifies the type of safety training, equipment, and procedures to be used during the site investigation and remediation.	All phases of the remedial response project will be executed in compliance with these standards.
Federal Regulatory Requirement	CERCLA and the NCP Regulations	40 CFR, Section 300.430	Applicable / Action Specific	Discusses the types of institutional controls to be established at CERCLA sites.	These regulations may be used as guidance in establishing appropriate institutional controls at Site 32.
State Regulatory Requirement	Florida Rules on Hazardous Waste Warning Signs	F.A.C. Chapter 62-730	Applicable / Action Specific	Requires warning signs at NPL and FDEP-identified hazardous waste sites to inform the public of the presence of potentially harmful conditions.	This requirement will be met.

**TABLE 2-7**  
**SUMMARY OF FEDERAL AND STATE ARARs AND GUIDANCE SPECIFIC TO ALTERNATIVE 2**  
**SITE 32, SOUTH FIELD MAINTENANCE HANGAR**  
**RECORD OF DECISION**  
**NAVAL AIR STATION WHITING FIELD**  
**MILTON, FLORIDA**  
**PAGE 2 OF 2**

Authority	Requirement	Citation	Status	Synopsis	Evaluation/Action To Be Taken
Federal Regulatory Requirement	NA	NA	NA	NA	There are no Federal Location-Specific ARARs specific to this site.
State Regulatory Requirement	NA	NA	NA	NA	There are no State Location-Specific ARARs specific to this site.

NA - Not Applicable

maximum practicable extent; however, the selected remedy does not provide for on-site treatment of contaminated material due to the nature of the contaminants and their location in an industrial area with heavy human and aircraft activity. Although the statutory preference for treatment is not met by the selected remedy, the remedy provides the best trade-off among the evaluated alternatives, with respect to the balancing and modifying evaluation criteria listed in Table 2-3.

Because Alternative 2 would result in hazardous substances remaining on site, a review would be conducted within five years after commencement of the RA to ensure the remedy continues to provide adequate protection of human health and the environment.

## **2.12 DOCUMENTATION OF SIGNIFICANT CHANGES**

There are no significant changes in the selected alternative described in the Proposed Plan (TtNUS, 2001b).

## REFERENCES

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**APPENDIX A**  
**COMMUNITY RELATIONS**  
**RESPONSIVENESS SUMMARY**

**Responsiveness Summary  
Site 32, North Field Maintenance Hangar  
Naval Air Station Whiting Field  
Milton, Florida**

A public comment period on the Site 32 Proposed Plan was held from 12 July through 11 August 2001. No public comments were received, and because a public meeting was not requested, one was not held.